as the Meteorological Committee of Weather Bureaus must necessarily concern itself primarily with official and administrative matters, there would be abundant opportunity for useful work of the sections along broad investigational lines. Two general resolutions to the following effect were passed:

"That there be appointed a joint committee of the International Union of Astronomy and of the section of Meteorology of the International Geophysical Union for investigational work on solar radiation."

"That there be appointed a joint committee of the sections of Terrestrial Magnetism and Electricity, and of Meteorology, of the International Geophysical Union, for international work in atmospheric electricity."

The success of the meetings of the International Research Council and of the affiliated International Unions was, in no small measure, due to the indefatigable labors of Monsieur G. Lecointe, the well-known director of the Belgian Royal Observatory at Uccle, who had charge of the local arrangements. He was reelected a member of the Executive Committee of the Council and also one of the five vice presidents of the International Astronomical Union. On Saturday afternoon, July 26, in response to M. Lecointe's invitation, the astronomers and geophysicists visited the Uccle astronomical and geophysical observatories and were later entertained at the director's home.

STEREOSCOPIC REPRESENTATION OF WIND MOVEMENT ALOFT.

By R. C. LANE and R. A. WELLS, Observers.

[Dated: Weather Bureau, Washington, Aug. 30, 1919.]

Prior to May, 1919, winds aloft had been represented by a series of charts, as explained in the MONTHLY WEATHER REVIEW, April, 1919, page 219, and figure 3, page 220. A separate map was constructed for each level for which a summary of the weather conditions was desired.

While that system of mapping is excellent to show a summary of the wind direction and velocity for any one level, it is inadequate for the busy forecaster. The data being distributed over six or eight maps are confusing when viewed as a whole, and it is equally difficult mentally to summarize the wind conditions aloft as set forth by such a series of maps in order to determine the turning of the wind aloft.

It was suggested by Maj. E. H. Bowie, Supervising Forecaster, that maps be prepared by piling arrows upon a post, the posts to be located upon a base-map indicating the location of each station, and the entire map to be photographed with a stereoscopic camera. The finished prints could be mounted upon cards and viewed through a stereoscope.

After a brief period of experimentation the present method was developed. Now, three elements may be represented on a single map, namely, wind direction, wind speed, and altitude above the surface of the earth.

Wind direction is represented to the nearest one of the 16 compass points, by setting the arrows, observing the top and bottom of the map as north and south, respectively. Wind speed or velocity is represented by the relative character on the head of the arrow. The principal characters used are the numerals from 0 to 8, inclusive, the relative values of which are given in the following table, in meters per second.

Scale of velocities for wind aloft map.

Arrow character.	Representative value.	Arrow character.	Representative value.
0	Calm, less than 1 m/s.	7	27 to 33 m/s.
1	1 to 3 m/s.	8	Above 34 m/s.
2	4 to 6 m/s.	M	Data missing.
3	7 to 10 m/s.	C	Low clouds.
4	11 to 15 m/s.	R	Raining.
5	16 to 20 m/s.	S	Snowing.
6	21 to 26 m/s.		

Altitude is represented by the length of the arrow and the position of the arrow on the post as set forth by the stereoscopic view. The longest arrow represents the surface, while the graduated shorter lengths represent, in meters, 250, 500, 1,000, 1,500, 2,000, 3,000, and 4,000, respectively, the length of the arrow decreasing with increase in altitude.

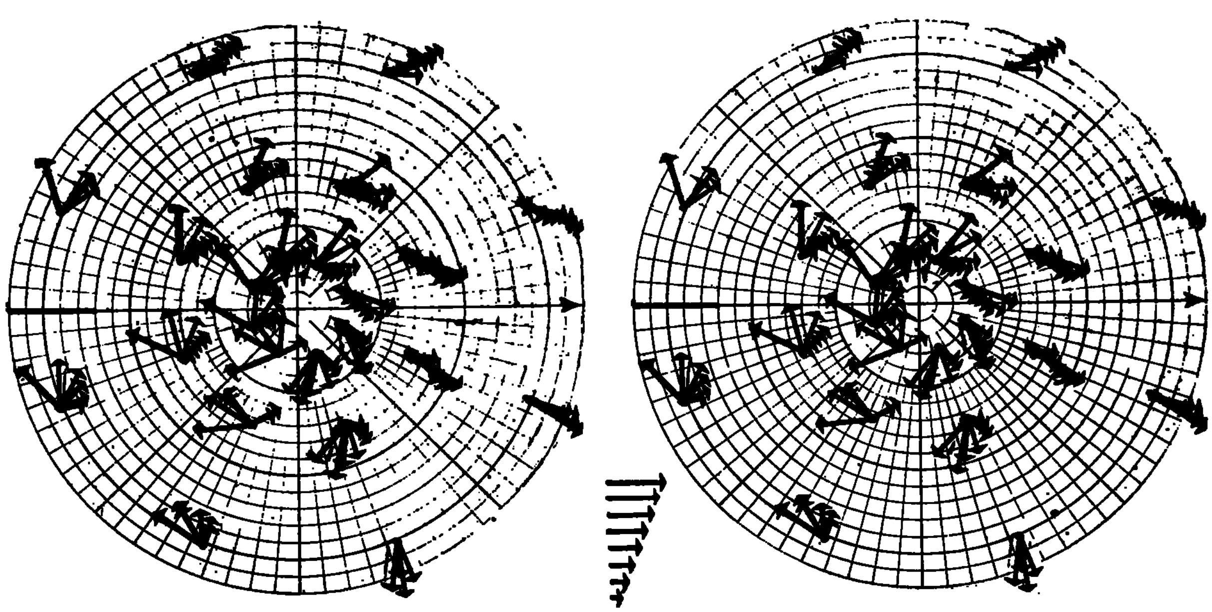

FIG. 1.—Average wind circulation aloft about HIGHS, as determined by W. R. Blair, at Mount Weather, Va. (Longest arrow, surface at 526 m.; next, 1,000 m.; shortest, 7,000 m.)

Note.—These plates may be cut out and viewed through a stereoscope.

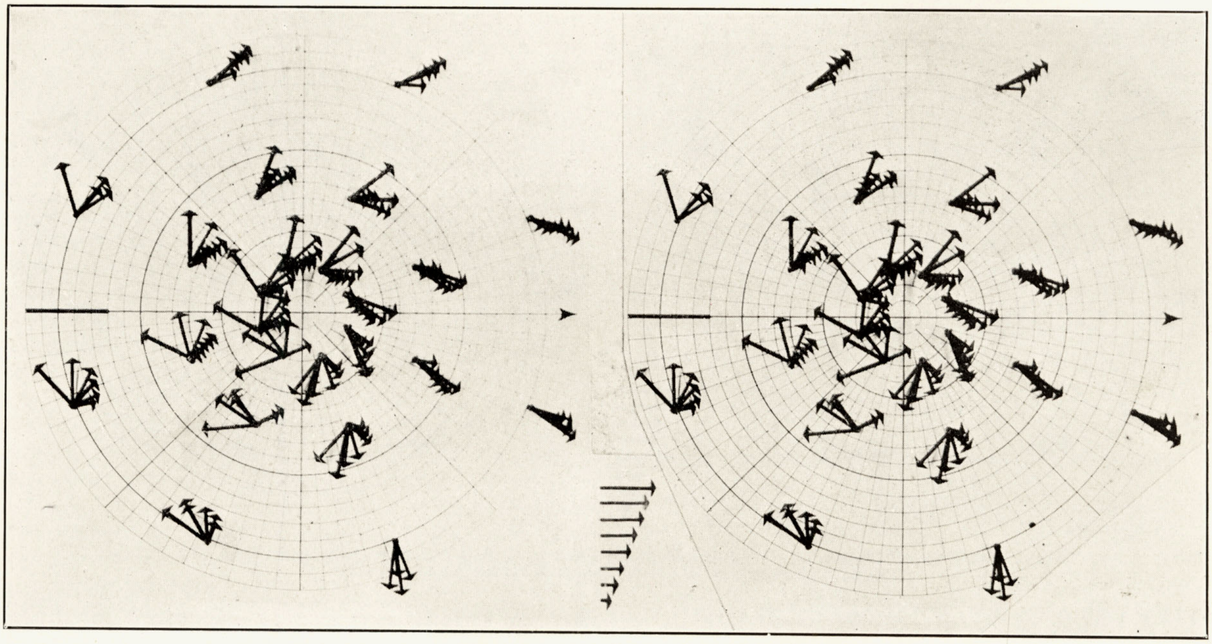

Fig. 1.—Average wind circulation aloft about HIGHS, as determined by W. R. Blair, at Mount Weather, Va. (Longest arrow, surface at 526 m.; next, 1,000 m.; shortest, 7,000 m.)

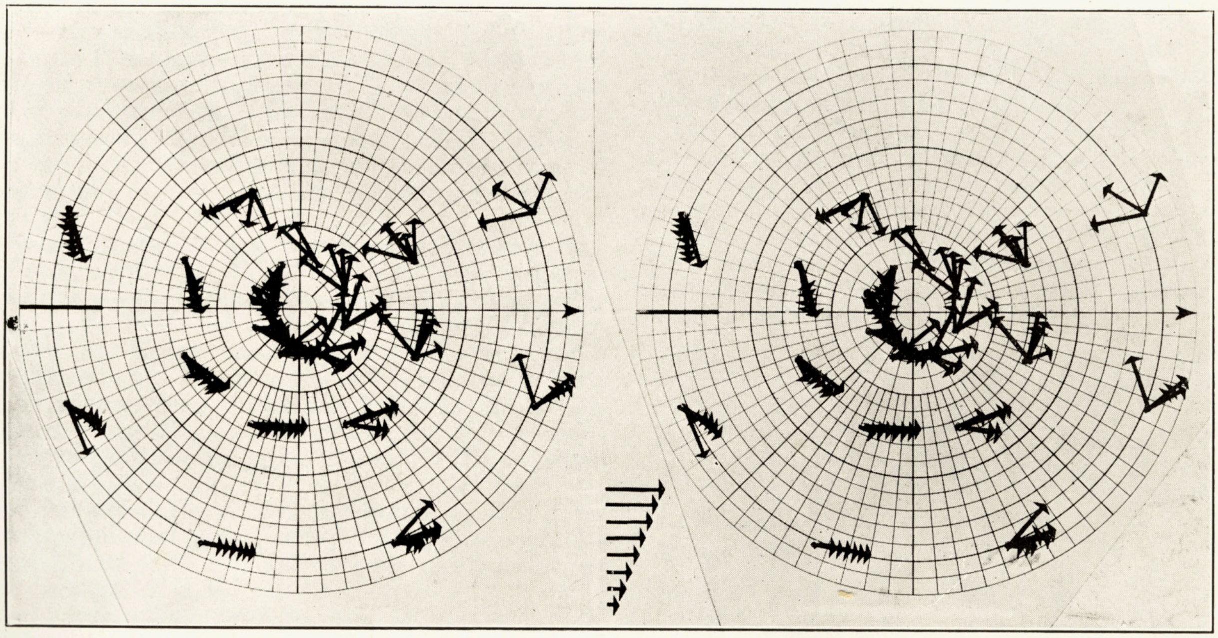

Fig. 2.—Average wind circulation aloft about LOWS, as determined by W. R. Blair, at Mount Weather, Va. (Longest arrow, surface at 526 m.; next, 1,000 m.; shortest, 7,000 m.)

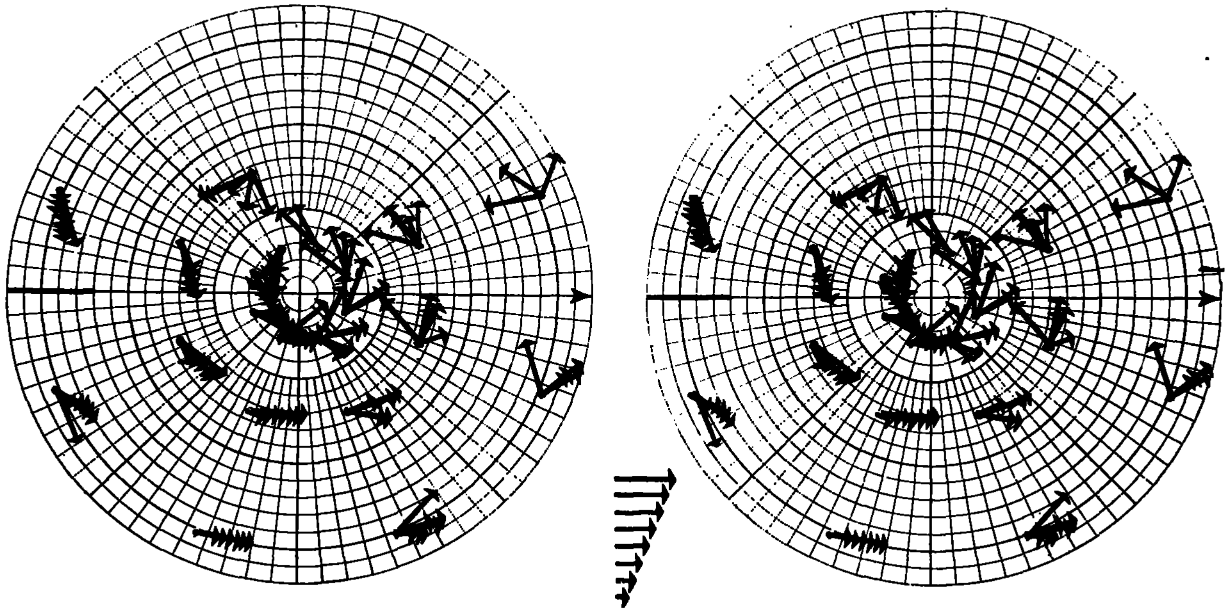

FIG. 2.—Average wind circulation aloft about LOWS, as determined by W. R. Blair, at Mount Weather, Va. (Longest arrow, surface at 526 m.; next, 1,000 m.; shortest, 7,000 m.)

The data from which the map is constructed are collected daily from the pilot balloon observation stations by telegraph. The posts are built up from the data and set in their relative positions, each post showing the wind conditions aloft for that particular station. From a distance of 10 feet away and perpendicular to the surface of the map a photographic exposure is made with a stereoscopic camera.

The object of using a stereoscopic camera is to set the flat map and superimposed arrows out in relief. For this work the stereoscopic camera has been replaced by one such as that the commercial photographer uses. Then, two separate exposures, one, 7½ inches to the right and the second 7½ inches to the left of the center of the map, are made. The principle is the same as that of the stereoscopic camera, but the results are far more satisfactory.

This system of upper air mapping with slight modification has been applied to "Means of wind observation in HIGHS and LOWS at Mount Weather. Blair—five-year summary, 1907 to 1912." Descriptions and explanations of the base figures have already been given in the Bulletin of Mount Weather Observatory, page 125, under "Wind direction at the different levels in relation to surface air pressure." Also in Report No. 13, Meteorology and Aeronautics, page 37, under "Wind change with height in LOWS."

Since wind velocities are not available for this summary, only the wind direction with altitudes could be represented; therefore, arrows with no designation of velocity were used.

Figure 1 represents average wind circulation aloft about HIGHS, and figure 2 represents average wind circulation aloft about LOWS, as determined from "Blair's Five-Year Summary of Mount Weather." If the accompanying figures are cut out and mounted, as printed, upon cards, they will be suitably arranged for study with the stereoscope. The arrows fly with the wind, and the length of the arrow decreases with increase in altitude.

THE ASCENSIONAL RATE OF PILOT BALLOONS.

By J. ROUCH.

[Translation and abstract from Comptes Rendus, Paris Acad., July 15, 1919, pp. 83-85

Aerological investigations carried on by the single theodolite method are dependent upon the assumption that the rate of ascent of a small rubber balloon filled with hydrogen is constant. During the war a great many experiments were made to verify and determine ascensional rates, a well as verify the fact that the rate of ascent is a function of the weight of the balloon and the ascensional force at the time the balloon is released.

Using rubber balloons, weighing 50 grams and given an ascensional force of 150 grams, 168 pilot-balloon flights were made by the two-theodolite method. The mean ascensional rate observed was 188 meters per minute.

The following table gives, for successive altitudes of 1,000 meters, the mean ascensional rate in meters per minute, together with the amounts of variation from the mean in each layer.

From—	To—	Number of observations.	Mean ascensional rate.	Amount of variation.			
				Less than one-tenth.	Between one-tenth and two-tenths.	Between two-tenths and three-tenths.	More than three-tenths.
Meters.	*Meters.*		*Min.*				
0	1,000	168	198	98	46	14	10
1,000	2,000	164	184	141	21	1	1
2,000	3,000	122	184	105	16	1	0
3,000	4,000	71	186	60	10	1	0
4,000	5,000	28	186	22	4	1	1
5,000	6,000	11	188	11	0	0	0
6,000	7,000	9	190	7	2	0	0
7,000	8,000	4	196	4	0	0	0
8,000	9,000	3	198	3	0	0	0
9,000	10,000	2	194	2	0	0	0

Notwithstanding the fact that above 6,000 meters the number of observations is very small, there were no varia-